

## Resource Technologies, Inc.

1050 East Main Street Suite 4, Bozeman, Montana 59715  
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October 16, 2013

Ms. Shannon Cala  
MDEQ-PTS  
P. O. Box 200901  
Helena, MT 59620-0901

Re: Standardized Additional Remedial Investigation Corrective Action Plan and Budget; Eddie's Corner; US Highway 87 and US Highway 191; Moore, Montana; Facility ID#14-02832; Release #1147; WP# 6755

Responsible Party: Joe Bauman  
65000 US Highway 87  
Moore, MT 59464  
(406) 374-2471

Dear Ms. Cala:

On behalf of Mr. Joe Bauman, Resource Technologies, Inc. (RTI) is submitting the following workplan for additional remedial investigation (RI) and remedial alternatives analysis at Eddie's Corner retail fuel dispensing facility located at the intersection of US Highway 87 (Montana Highway 200) and US Highway 191, west of Moore, Montana (Figure 1). Work tasks described in this workplan are being completed to further delineate soil and groundwater impacts associated with historic releases at the site and evaluate potential corrective actions that could lead to site closure. This workplan was prepared in accordance with the letter from the Montana Department of Environmental Quality-Petroleum Technical Section to Mr. Joe Bauman, dated August 1, 2013.

### 1.0 SITE BACKGROUND

Eddie's Corner has operated as a truck stop dispensing gasoline and diesel fuel since at least the early 1950s. Site features prior to facility renovation in the 1990s included a restaurant where the current building stands and a garage and gas station that was located to the west of the current building. Current site layout with locations of former USTs and dispensers is included as Figure 2.

The facility was renovated in 1992. At that time, three 4,000-gallon gasoline USTs, one 4,000-gallon diesel UST, and one 2,000-gallon diesel UST were removed from the UST basin located west of the current building. All piping associated with the former UST system was also removed. Two 4,000 gallon and one 6,000 gallon gasoline USTs were

installed beneath the new gasoline island located north of the building. One 8,000-gallon diesel UST was installed beneath the new diesel island located south of the building.

During removal of the former UST system, impacted soil was encountered in the UST basin and beneath the dispensers. According to a Remedial Investigation Report dated May 21, 1993, completed by Abenaki Geoenvironmental, Inc. (Abenaki), excavated soil was landfarmed offsite. The report does not include information on the volume of soil excavated, confirmation sampling results, or the location of the landfarm. The report indicates that the UST basin was located east of the current gasoline dispensers; however, Joe Bauman has stated that this information is not accurate and the excavation locations were actually as shown in Figure 2.

According to a sketch provided to RTI by Mr. Bauman that was made during excavation activities, the UST basin excavation measured 34 feet by 33 feet by 11 feet deep. The more northerly dispenser excavation measured 16 feet by 24 feet by 12 feet deep. The other dispenser excavation measured 26 feet by 18 feet by 12 feet deep with a 15 foot by 12-foot area within the excavation being advanced to a total depth of 18 feet.

Abenaki installed four groundwater-monitoring wells and sampled the wells three times from February 1993 through January 1994. Analytical results indicated elevated concentrations of BTEX compounds (benzene, toluene, ethylbenzene, and xylenes) in well MW-3 located northwest of the current gasoline dispenser area. A benzene concentration of 91.3 micrograms per liter ( $\mu\text{g/l}$ ) was reported in this well in December 1993. Benzene was also detected in monitoring well MW-2 located east of the current gasoline dispensers. None of the wells installed by Abenaki exist today.

RTI conducted additional remedial investigation activities in August 2012 that included installation of seven new groundwater-monitoring wells at the locations shown in Figure 2. Groundwater samples were collected from the new monitoring wells in August 2012 and March 2013.

## 2.0 CURRENT SITE STATUS

### 2.1 Geology and Hydrogeology

The site is underlain by fill materials of varying descriptions to depths of 4 to 10 feet below ground surface (bgs). Fill materials are underlain by a glacial till composed of sandy to gravelly clay and clayey gravel to depths of approximately 15 to 20 feet bgs. The glacial till is underlain by a very stiff to hard laminated (varved) clay to greater depths than were penetrated by well boreholes. The contact between the till and underlying clay appears to dip to the north as the contact was encountered at greater depths on the northern portion of the site.

Groundwater was encountered at depths of approximately 8 to 17 feet bgs during the recent sampling event. Groundwater flows to the north-northwest at an average gradient of 0.066. The gradient appears to be much steeper on the northern portion of the site.

The water supply for the site comes from a flowing artesian well located 200 to 300 feet upgradient of the impacted area. The well is 1,300 feet deep and flows under artesian pressure at a rate of approximately 20 gallons per minute (Joe Bauman, personal communication).

## **2.2 Contaminants of Concern**

Contamination identified during the remedial investigation conducted in 2012 and 2013 consisted mainly of dissolved-phase diesel-range hydrocarbons. No vadose-zone soil impacts were identified during installation of the seven new monitoring wells. The dissolved hydrocarbon plume appears to be centered around well MW-6 near the northeast corner of the truck stop building. This location corresponds to the location of a dispenser area that was excavated in the 1990s. The configuration of the dissolved total extractable hydrocarbon (TEH) plume is shown in Figure 3.

There also appear to be gasoline-range impacts associated with the dissolved hydrocarbon plume; however, dissolved gasoline impacts appear to be substantially degraded as the profile of detected compounds is skewed toward the heavier end of the gasoline range and the lighter, more soluble compounds have attenuated to non-detectable concentrations. Groundwater analytical results from the August 2012 and March 2013 groundwater sampling events are included in Table 1.

## **3.0 PROJECT OBJECTIVES**

There are four objectives to the work tasks to be completed under this RI workplan:

1. Define the upgradient and downgradient extent of the dissolved hydrocarbon plume;
2. Investigate the area around the northeast corner of the building to determine if there is a continuing vadose-zone source leaching to groundwater;
3. Evaluate potential receptors, preferred migration pathways, and exposure potential; and
4. Evaluate remedial strategies to mitigate the dissolved hydrocarbon plume.

## **4.0 SCOPE OF WORK**

To meet the project objectives described above seven general work tasks including a receptor survey, soil investigation, groundwater investigation, utility investigation, remedial alternatives analysis, migration pathways and exposure potential evaluation, and reporting will be completed. Specific work tasks associated with the general tasks listed above are described in the following sections.

### **4.1 Site Reconnaissance**

No site reconnaissance will be required prior to implementing RI activities proposed in this workplan.

## **4.2 Workplans**

Workplans for hydrogeologic testing or remedial system pilot tests may be required in the future and will be based on results of RI activities to be conducted under this workplan.

## **4.3 Project Management**

Project management tasks associated with this RI may include client and DEQ consultation, preparing scopes of work and budgets, and budget tracking.

## **4.4 Map Preparation**

An accurate site map based on a survey by a Montana Licensed Surveyor currently exists. Any maps required in future reports or workplans would use this existing map as a base.

## **4.5 Travel**

Travel to and from the site will be limited to trips for on-site work tasks. Any records research that may require travel will be coordinated with mobilizations for on-site activities.

## **4.6 Receptor Survey**

RTI will identify potential receptors including water wells, basements, and crawlspaces at and in the vicinity of the facility. Montana Groundwater Information Center (GWIC) well records will be researched to identify water wells in the vicinity of the site. If soil investigation activities indicate that a vadose- zone source exists on site near facility buildings, RTI will screen indoor air for the presence of volatile organic compounds with a photoionization detector (PID) and may recommend indoor air and/or sub-slab vapor sampling for petroleum compounds.

## **4.7 Soil Investigation**

The dissolved hydrocarbon plume identified during the remedial investigation completed in 2012-2013 appears to be centered near the northeast corner of the truck stop building where contaminated soil was excavated from a dispenser area in the early 1990s. Due to the presence of overhead power lines in this area, RTI was not able to thoroughly investigate this area for soil impacts with the auger rig that was on site for well installation.

To assess potential soil impacts in this area, RTI will supervise installation of up to five soil borings using a Powerprobe direct-push soil-sampling rig. Proposed soil boring locations are shown in Figure 4. Soil borings will be advanced to the soil groundwater interface anticipated to lie at depths of 11 to 15 feet and will be continuously sampled. borehole lithologies and any other relevant information will be recorded on a borehole log by the RTI geologist supervising sampling activities.

Soil samples will be field screened for the presence of hydrocarbon vapors with a PID and standard headspace methods. The soil sample from each borehole exhibiting the highest PID reading and/or the sample collected immediately above the soil/groundwater interface will be retained and submitted to Advanced Analytical Associates of Bozeman for volatile petroleum hydrocarbons (VPH) and extractable petroleum hydrocarbons

(EPH) screen analyses. Samples exhibiting a total extractable hydrocarbon (TEH) concentration greater than 200 milligrams per kilogram will be further analyzed for EPH-range aliphatic and aromatic compounds.

#### **4.8 Groundwater Investigation**

##### **4.3.1 Monitoring Well Installation**

The dissolved TEH plume remains undefined at the downgradient margin and poorly defined in the upgradient area between MW-1 and MW-6. RTI proposes installing three new monitoring wells and one piezometer at the locations shown in Figure 3 using hollow stem auger drilling methods. Total depth of monitoring well boreholes is anticipated to be 20 to 25 feet. Depth of the piezometer will be 17 feet. During drilling, soil samples will be collected at approximate 2.5-foot intervals. Soil samples will be field screened and retained for analysis according to methods described in the preceding section.

Monitoring wells will be constructed with 2-inch schedule 40 PVC casing and 15 feet of 0.010-inch well screen positioned to intercept the water table allowing for seasonal fluctuations. The piezometer will be screened just above the contact between the gravelly till and underlying varved clay at a depth of 16 to 17 feet. Wells will be completed with traffic rated-flush mounted manholes. Positions and top-of-casing elevations will be surveyed to the nearest 0.01-foot by a Montana licensed surveyor.

New monitoring wells will be developed by surging and pumping until a visibly non-turbid discharge is obtained, until further pumping produces no further improvement in water clarity, or until the wells are pumped dry.

##### **4.3.2 Groundwater Sampling**

Groundwater samples will be collected from all site-monitoring wells with disposable PVC bailers. During sampling, water quality parameters including temperature, pH, dissolved oxygen, conductivity, and oxidation/reduction potential will be recorded. Groundwater samples will be submitted to Advanced Analytical Associates of Bozeman for volatile petroleum hydrocarbons (VPH) and extractable petroleum hydrocarbons (EPH) Screen analyses. In addition, samples will be analyzed for natural attenuation parameters (NAPs) including total organic carbon, sulfate, nitrate + nitrite as N, dissolved iron, and methane. NAPs data will be used to determine the assimilative capacity of groundwater at the site.

##### **4.3.3 Aquifer Testing**

The piezometer to be installed in the vicinity of MW-6 will be slug tested to determine the hydraulic conductivity of the water table aquifer. Hydraulic conductivity data will be used to in conjunction with NAPS data to estimate the time period required for natural attenuation of the dissolved hydrocarbon plume and assess the feasibility of delivering amendments to the dissolved hydrocarbon plume to enhance the rate of plume degradation. Slug-in and slug-out tests will be completed by introducing a slug of known

volume (slug-in) to the well. A one-liter capacity bailer filled with distilled water will be used as the slug. Water-level response will be measured with a pressure transducer positioned near the bottom of the piezometer. When water level in the piezometer has returned to within 0.1 feet of the water level measured prior to the start of the slug in test, the slug out test will be conducted by removing the slug.

Slug test data will be analyzed by the Hvorslev Method that was developed for slug testing unconfined water-table aquifers.

Time versus recovery ratio is plotted on a semi-log graph. Time is plotted in elapsed seconds since introduction/withdrawal of the slug. Time is plotted on the linear axis of the graph and recovery ratio is plotted on the logarithmic axis. Recovery ratio is calculated by dividing the unrecovered head difference at time  $t$  by the total head change at slug withdrawal; or:

$$\frac{H - h}{H - H_0}$$

Hydraulic conductivity ( $K$ ) is then calculated using the following equation:

$$K = r^2 \ln (L/R) / 2LT_0$$

where

$H_0 = h$  at  $t = 0$

$r$  is the radius of the well casing

$R$  is the radius of the well screen

$L$  is the length of the well screen

$T_0$  is the time at which the recovery ratio is equal to 0.37 and is determined graphically.

#### 4.9 Utility Investigation

RTI will determine the locations of buried utilities at the facility, and to the extent possible, determine the materials of construction. Site as-built plans will be examined (if available) to identify on-site utility corridors, and utility companies will be contacted to determine buried utility locations adjacent to the site.

One of the Powerprobe soil borings will be placed immediately adjacent to the water line that runs from the building to the landscaped area at the northwest corner of the facility. A tap water sample will be collected from the hydrant located in the landscaped area at the northwest corner of the facility. The sample will be submitted to Energy Laboratories of Billings for volatile organic compounds (VOCs) analysis by EPA Method 524.2. Data from the utility investigation will be used to assess susceptibility of buried utilities to petroleum contamination.

#### **4.10 Migration Pathways and Exposure Potential Evaluation**

Following completion of the soil, groundwater, and utilities investigations, RTI will evaluate potential migration pathways (most likely pathways are soil and groundwater) to determine if they present an exposure risk.

#### **4.11 Remedial Alternatives Analysis**

Upon completion of investigation activities, RTI will conduct a remedial alternatives analysis. If a vadose-zone source is identified during the investigation, RTI will assess options for source mitigation including excavation and in-situ methods. If no vadose-zone source is identified, RTI will evaluate options for mitigation of groundwater impacts that account for site conditions (soil type, hydrogeologic properties of the water table aquifer, severity of impacts, exposure potential) as well as a “no further action” option.

Remedial alternatives will be evaluated with respect to cost, performance, reliability, feasibility of implementation, safety, and effects on public health and the environment.

#### **4.12 Reporting**

Upon completion of all work tasks described in the previous sections and receipt of analytical data, RTI will prepare and submit a Standardized Additional Remedial Investigation Report (Report Format RIR-02) that will incorporate historic data and all data generated under this workplan. The report will include a discussion of potential corrective actions and the feasibility of each with recommendations for site cleanup.

### **5.0 SCHEDULE**

Monitoring well installation, soil boring, and groundwater sampling activities will be completed within 60 days of receiving MDEQ approval of this workplan. Exposure potential evaluation and remedial alternatives analysis will be completed following receipt of all analytical data associated with the soil and groundwater investigation.

### **6.0 BUDGET**

The budget for activities proposed under this CAP is included in the attached cost estimate and unit cost worksheet for groundwater sampling. RTI solicited bids for monitoring well drilling from Haztech Drilling of Billings, Hansen Drilling of Glasgow, and SK Geotechnical of Billings. SK Geotechnical did not provide a bid. RTI solicited a single bid for direct-push soil sampling services from NCI Engineering of Great Falls. NCI's Powerprobe rig is capable of augering as well as direct push sampling. Geoprobe direct push rigs do not have the augering capability and may not be able to complete the soil-sampling task. As such, bids were not sought from Geoprobe contractors. Arrow Creek Survey Company of Geyser provided a bid for well surveying services. Subcontractor bids are attached. The total estimated cost of the proposed activities, including workplan preparation is \$36,960.24.

## **7.0 STANDARD OPERATING AND QUALITY CONTROL PROCEDURES**

### **7.1 Quality Assurance/Quality Control (QA/QC) Plan**

RTI's general QA/QC plan for investigation and sampling methods at petroleum release sites is on file at DEQ.

### **7.2 Standard Operating Procedures**

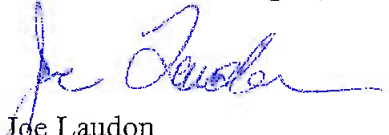
RTI's Standard Operating procedures for investigation and sampling at petroleum release sites is on file at DEQ.

### **7.3 Investigation Derived Waste**

Investigation derived waste will include soil cuttings from soil boreholes, purgewater from monitoring well development and sampling, and rubbish including used bailers, plastic direct-push core barrels, gloves, twine, and paper towels. Soil cuttings will be deposited on the ground surface on property owned by Mr. Joe Baumann across State Highway 191 west of the facility. Purgewater will be discharged to the ground surface in accordance with DEQ Technical Guidance Document #10. Rubbish will be deposited in on site waste receptacles.

If you have any questions or comments regarding this workplan, please do not hesitate to call.

Respectfully Submitted,  
**Resource Technologies, Inc.**



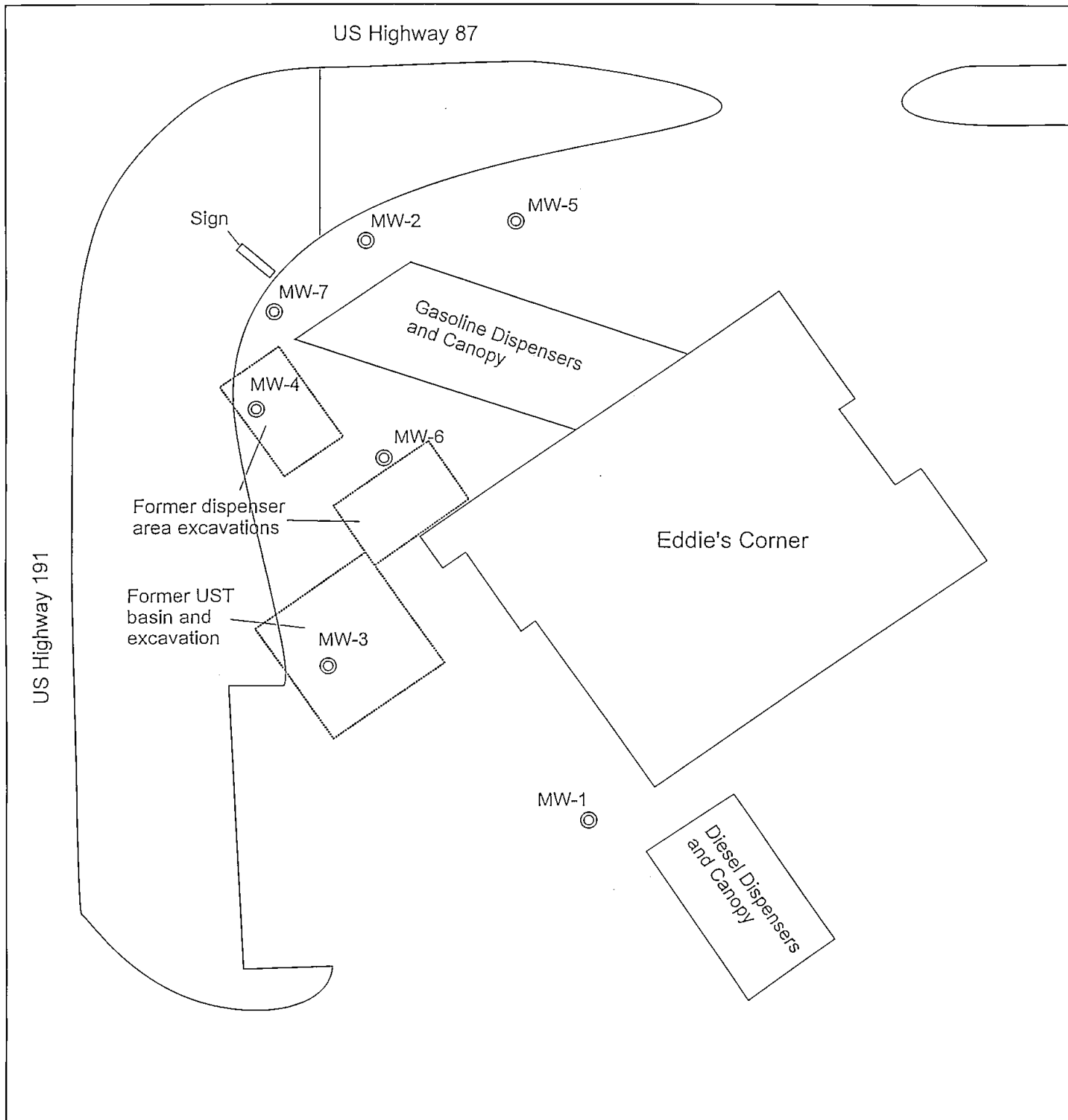
Joe Laudon  
Hydrogeologist

Attachments

cc: Mr. Joe Bauman



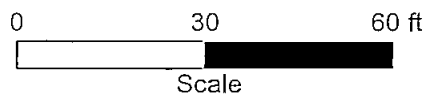




#### Legend

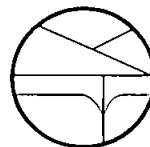
⊙ MW-1

Monitoring Well

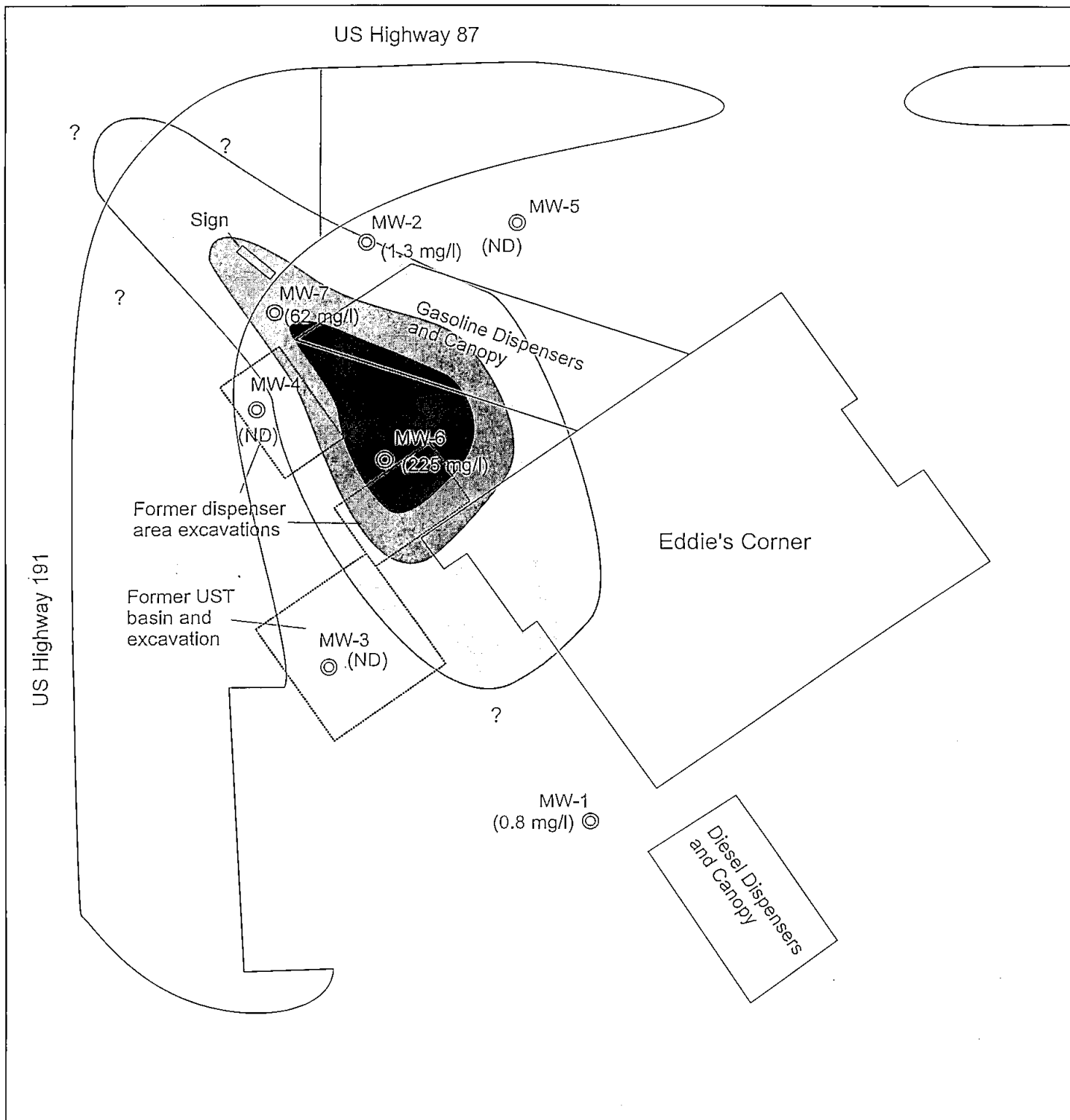


#### Figure 2

Site Map  
Eddie's Corner  
Moore, Montana



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Legend

- MW-6  
 ◎ (225 mg/l)      Monitoring well with TEH concentration
- TEH > 100 mg/l  
 ●      TEH > 10 mg/l  
 ○      TEH > 1 mg/l

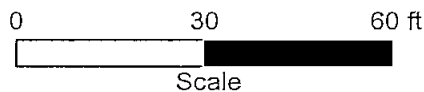
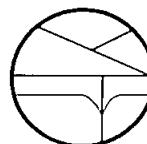
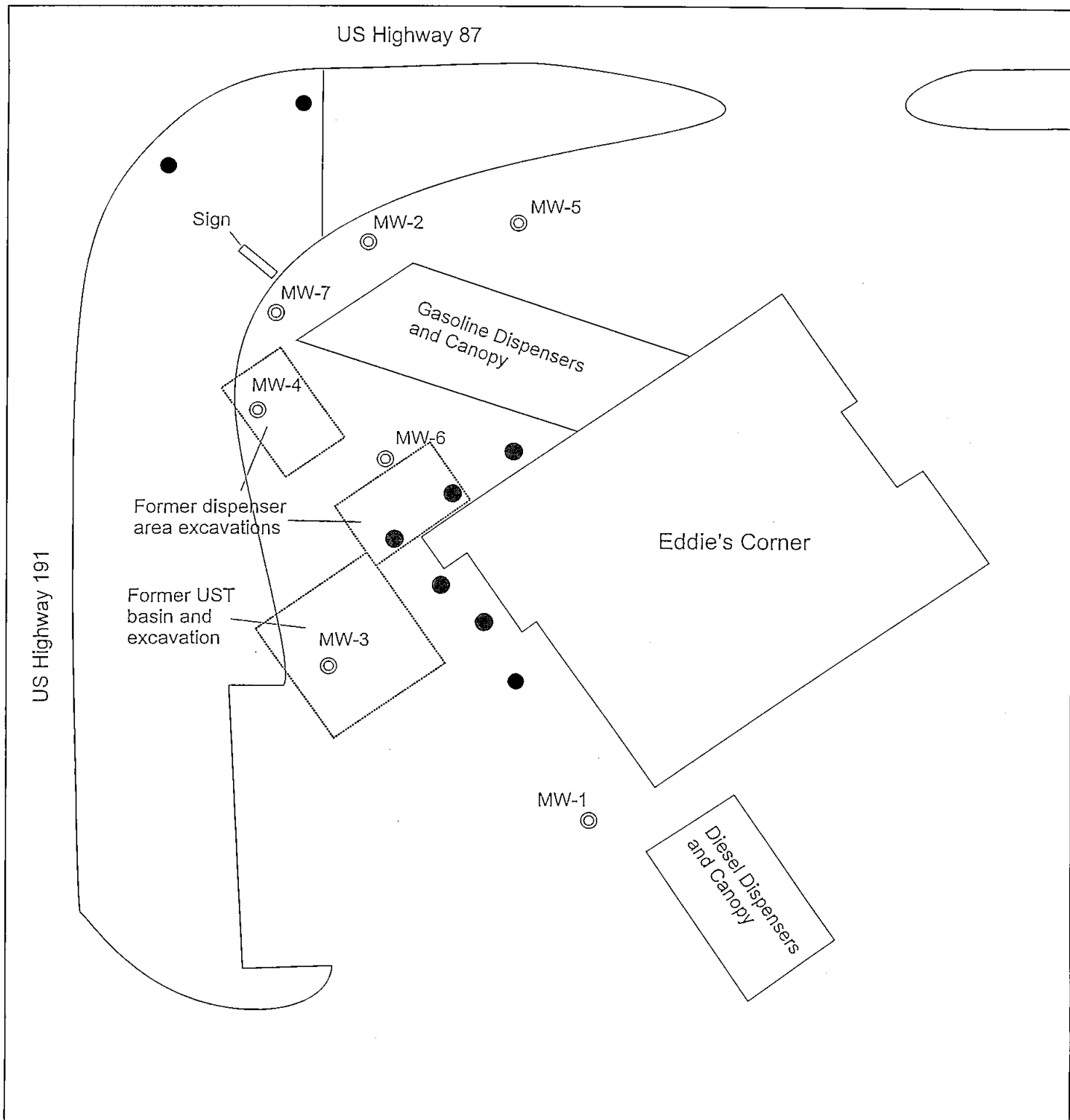


Figure 3

TEH Concentration in Groundwater  
 March 11, 2013  
 Eddie's Corner  
 Moore, Montana



Resource  
 Technologies  
 Inc.



#### Legend

- ⊙ Existing groundwater monitoring well
- Proposed groundwater monitoring well
- Proposed Geoprobe soil boring

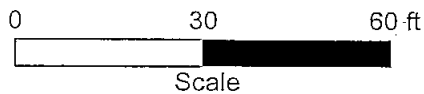
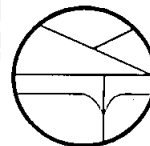


Figure 4

Proposed Soil Boring/  
Monitoring Well Locations  
Eddie's Corner  
Moore, Montana



Resource  
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Inc.

Table 1. Cumulative Groundwater Analytical Results;  
Eddies Corner; Moore, Montana

Sampling Location	Date	MTBE µg/l	Benzene µg/l	Toluene µg/l	Ethyl- benzene µg/l	Xylenes µg/l	Naph- thalene µg/l	TPH mg/l	VPH			TEH mg/l	EPH		
									C5-C8 Aliphatics mg/l	C9-C12 Aliphatics mg/l	C9-C10 Aromatics mg/l		C9-C18 Aliphatics mg/l	C19-C36 Aliphatics mg/l	C11-C22 Aromatics mg/l
MW-1	8/29/12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
	3/11/13	ND	ND	ND	ND	ND	12	0.05	ND	0.05	ND	0.8	-	-	-
MW-2	8/29/12	ND	ND	ND	ND	ND	27	2.3	1.4	0.67	0.25	0.9	-	-	-
	3/11/13	ND	ND	ND	ND	ND	61	1.8	0.91	0.64	0.24	1.3	0.6	ND	0.3
MW-3	8/29/12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
	3/11/13	ND	ND	ND	ND	ND	24	ND	ND	ND	ND	ND	-	-	-
MW-4	8/29/12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
	3/11/13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
MW-5	8/29/12	ND	ND	ND	23	54	ND	ND	ND	ND	ND	5.1	2.4	ND	0.3
	3/11/13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
MW-6	8/29/12	ND	ND	8	150	180	1,100	30	14	10	4.9	350	270	ND	6.7
	3/11/13	ND	ND	330	390	2,200	3,800	170	83	68	20	225	130	7.3	35
MW-7	8/29/12	ND	ND	81	310	240	1,300	32	18	9.2	5.1	170	47	ND	59
	3/11/13	ND	ND	ND	6	8	270	8.7	3	3.5	2.5	62	55	ND	14
Tier 1 RBSLs		30	5	1,000	700	10,000	100	1	0.7	1	1	1	1	1	1

VPH = volatile petroleum hydrocarbons

TPH = total purgable hydrocarbons (total petroleum hydrocarbons in 2/98 and 8/98)

TEH = total extractable hydrocarbons

µg/l = micrograms per liter

mg/l = milligrams per liter

ND = Not detected above practical quantitation limit.

Tier 1 RBSLs = Tier 1 Risk Based Screening Levels for Groundwater

**Cost Estimate and  
Groundwater Sampling Unit Cost Worksheet**

## COST ESTIMATE --

Workplan Preparation and Additional Remedial Investigation  
Eddie's Corner; Moore, Montana

TASK	ESTIMATED QUANTITY	UNIT	CATEGORY	UNIT COST	EXTENDED COST
<b>Task 1: Workplan Preparation</b>					
Solicit subcontractor bids	2	hr	G-II	\$111.75	\$223.50
Workplan Preparation	20	hr	G-II	\$111.75	\$2,235.00
Prepare Budget	4	hr	G-III	\$125.00	\$500.00
Drafting	2	hr	Drafter	\$69.50	\$139.00
Workplan Review	2	hr	E-III	\$125.00	\$250.00
Copies (est)	50			\$0.10	<u>\$5.00</u>
Task 1 Subtotal					\$3,352.50
<b>Task 2: Soil Investigation</b>					
Coordination/Utility Location	2	hr	G-II	\$111.75	\$223.50
Update Health and Safety Plan	1	hr	G-II	\$111.75	\$111.75
<u>Soil Boring Installation</u>					
Prep and Mobilization	6	hr	G-I	\$97.50	\$585.00
Soil Boring Oversight and Sampling	8	hr	G-I	\$97.50	\$780.00
<u>Equipment and Expenses</u>					
PID	1	day		\$80.85	\$80.85
Lodging	1	night		\$85.00	\$85.00
Per Diem	1	day		\$23.00	\$23.00
Misc Supplies (Gloves, etc)	1	lump		\$10.00	\$10.00
Mileage	400	mi		\$0.55	\$220.00
<i>Subcontractor Costs:</i>					
Powerprobe Services	1	lump			\$2,948.85
7% Subcontractor Markup					\$206.42
<u>Analytical Services</u>					
Soils Analysis	5	VPH		\$150.00	\$750.00
	5	EPH*		\$75.00	\$375.00
Sample Fees	5			\$10.00	<u>\$50.00</u>
Task 2 Subtotal					\$6,449.37
<b>Task 3: Groundwater Investigation</b>					
<u>Monitoring Well/Piezometer Installation</u>					
Soil Boring/Well Installation Oversight	16	hr	G-I	\$97.50	\$1,560.00
Well Development	6	hr	T-III	\$84.75	\$508.50
<u>Groundwater Sampling</u>	See attached unit cost worksheet				
	1	lump		\$6,053.00	\$6,053.00
<u>Aquifer Testing</u>	4	hr	G-I	\$97.50	\$390.00
<u>Equipment and Expenses</u>					
Water Level Indicator	3	day		\$49.50	\$148.50
Pressure Transducer	1	day		\$175.00	\$175.00
<i>Subcontractor Costs:</i>					
Monitoring Well Drilling Services	1	lump			\$5,691.00
7% Subcontractor Markup					\$398.37
Surveying Services	1	lump			\$800.00
7% Subcontractor Markup					\$56.00

## COST ESTIMATE --

Workplan Preparation and Additional Remedial Investigation  
Eddie's Corner; Moore, Montana

TASK	ESTIMATED QUANTITY	UNIT	CATEGORY	UNIT COST	EXTENDED COST
Task 3: Groundwater Investigation - Continued					
<u>Analytical Services</u>					
Soils Analysis	3	VPH		\$150.00	\$450.00
	3	EPH*		\$75.00	\$225.00
Sample Fees	3			\$10.00	<u>\$30.00</u>
Task 3 Subtotal					\$16,485.37
Task 4: Receptor Survey/Utilities Investigation					
Review Well Records/Utility Drawings	6	hr	G-II	\$111.75	<u>\$670.50</u>
<u>Analytical Services</u>					
Irrigation Water Analysis	1	VOCs	EPA 524.2	\$220.00	\$220.00
Task 4 Subtotal					\$890.50
Task 5: Migration Pathways/Exposure Potential Analysis					
Migration Pathways Analysis	6	hr	G-II	\$111.75	\$670.50
Exposure Potential Analysis	6	hr	G-II	\$111.75	<u>\$670.50</u>
Task 5 Subtotal					\$1,341.00
Task 6: Remedial Alternatives Analysis					
RAA Screening and Cost Analysis	18	hr	G-II	\$108.50	\$3,255.00
RAA Comparative Analysis	6	hr	E-II	\$108.50	<u>\$868.00</u>
Task 6 Subtotal					\$4,123.00
Task 7: Reporting					
Data Analysis	8	hr	G-II	\$111.75	\$894.00
Report preparation	24	hr	G-II	\$111.75	\$2,682.00
Drafting	5	hr	Drafter	\$69.50	\$347.50
Workplan Review	3	hr	E-III	\$125.00	\$375.00
Copies (est)	200			\$0.10	<u>\$20.00</u>
Task 7 Subtotal					\$4,318.50
TOTAL					\$36,960.24

Note: All services not included in the attached unit cost worksheet will be billed on a time and materials basis and a detailed breakdown of costs will be provided at the time of billing.



# Petroleum Release Section/Petroleum Tank Release Compensation Board Groundwater Monitoring and Sampling Unit Cost Worksheet

## Contractor Information

Company Name: Resource Technologies, Inc.  
Address: 1050 East Main Street #4  
City, State, Zip: Bozeman, Montana, 59715  
Phone: (406) 585-8005  
Cost Estimator: Laudon

## Project Information

Site Name: Eddie's Corner Facility ID # 14-02832  
Address: US Hwy 87 and US Hwy 191 Release # 1147  
City: Moore

## Monitoring Well Details

Total Number of Wells at Site 10  
Number of Wells to be monitored \_\_\_\_\_  
Number of Wells to be monitored/sampled 10  
Well Casing Diameter (inches) 2  
Average Depth to Groundwater (ft) 15  
Average Depth of Wells (ft) 25

## Well Purging Method

☒ Hand bailing  
☐ Peristaltic Pump  
☐ Submersible Pump  
☐ Micropurge  
☐ No Purge  
☐ Other (please specify) \_\_\_\_\_

## Monitoring/Sampling Interval

Estimated Start Date: June 2012  
☐ Quarterly (# of events \_\_\_\_\_)  
☐ Semi-annual (# of events \_\_\_\_\_)  
☒ Annual (# of events 1)  
Other (please specify) \_\_\_\_\_

## Other Services

☐ Free Product Recovery  
☐ Groundwater Well Survey  
☐ Wellhead retrofit/reconstruction  
☐ Other (please specify) \_\_\_\_\_

## Cost Estimate Explanation:

<sup>(1)</sup> Mobilization/Demobilization: Includes all costs and mileage to transport equipment, materials, and personnel to and from the site location. More than one mobilization event will require justification and pre-approval by the DEQ-PRS and Board staffs. This item should be on a per mile unit rate.

<sup>(2)</sup> Water Level Measurements: Includes all costs (labor, equipment, materials, and well consumables) to measure groundwater depth, collect other groundwater information from well, and decontaminate equipment. The well monitoring costs should be on a per well basis and does not include purging and sampling of the well.

<sup>(3)</sup> Well Monitoring/Purging/Sampling: Includes all costs (labor, equipment, materials, and well consumables) to monitor (see above), purge, sample groundwater, decontaminate equipment, and handle disposal of contaminated purge water. The cost should be on a per well basis.

<sup>(4)</sup> Laboratory Analysis: Includes all laboratory costs for all wells, for duration of project. It is realized that some laboratory analyses will not be conducted for every event and that the well sampling frequency may change.

<sup>(5)</sup> PTRCB Sampling Fee: Includes all costs related to management of the sample including: sample container, cooler, packing, shipping, handling, sample preservation, and office related handling charges.

<sup>(6)</sup> Report Preparation and Project Management: Includes all costs (labor and materials) project management, report preparation, and report submittal, including all office related costs, per groundwater sampling event.

# GROUNDWATER MONITORING AND SAMPLING UNIT COST WORKSHEET

Task	Unit Cost	Number of Units	Total Cost
<b>Project Management</b>	\$111.75/hr	4	\$447.00
<b>Mobilization/Demobilization<sup>(1)</sup></b>			
Mobilization/Demobilization	\$2.25/mile	300	\$675.00
<b>Field Work</b>			
Water Level Measurements <sup>(2)</sup>	/well		\$
Well Monitoring/Purging/Sampling <sup>(3)</sup>	\$135.00/well	10	\$1,350.00
Other Service (please specify)	/well		\$
Other Service (please specify)			\$
<b>Report Preparation &amp; Project Management<sup>(6)</sup></b>			
Quarterly/Semi-annual	/report		\$
Annual	/report		\$
Other (please specify)	/report		\$
<b>Subtotal Project Expenses</b>			<b>\$2,472.00</b>
Lodging and laboratory analysis may only be paid at actual costs when documented by receipts /invoices.			
<b>Per Diem</b> (specify number of individuals _____)			
Per Diem: Motel	\$85.00/person per day	1	\$85.00
Per Diem: Food	\$23.00/person per day	2	\$46.00
<b>Laboratory Analysis<sup>(4)</sup></b>			
Volatile Petroleum Hydrocarbons (VPH)	\$150.00/sample	10	\$1,500.00
Extractable Petroleum Hydrocarbons (EPH)			
EPH "screen"	\$75.00/sample	10	\$750.00
EPH "fractions"	\$175.00/sample		\$
BTEX/MTBE/Naphthalene only-method:	/sample		\$
Polyaromatic Hydrocarbons (PAHs)	/sample		\$
PTRCB sampling fee <sup>(5)</sup>	\$10.00/sample	10	\$100.00
Other (please specify) <u>NAPs</u>	\$110.00/sample	10	\$1,100.00
Other (please specify)	/sample		\$
<b>Total Project Expense \$6,053.00</b>	<b>Subtotal of Per Diem &amp; Lab</b>		<b>\$3,581.00</b>
<b>Project Expense per event (total project cost / # of events)</b>			<b>\$6,053.00</b>

Special Conditions: Cost for EPH Fractions will be \$175 per sample. Reporting costs included in RIR reporting costs.

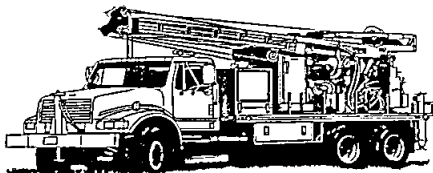
Additional Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## **Subcontractor Bids**

# HAZTECH Drilling, Inc.



P.O. Box 30622  
2910 Hannon Road, Suite #6  
Billings, MT 59107  
Phone: 406-896-1164 or 800-359-1502  
Fax: 406-896-1462

## Proposal

TO: Resource Technologies, Inc.  
ATTN: Joe Laudon  
1050 East Main St. #4  
Bozeman, MT 59715  
Ph-406-585-8005

DATE: 9/3/2013

PROJECT Eddie's Corner  
ReBid

### Description:

3-25ft wells with 15ft of .010 screen and  
flush mount covers. 1-17ft well with 1ft of  
screen and a flush mount cover.

TERMS: Net 30 Days

	UNITS EST.	UNIT PRICE	AMOUNT EST.
*****	*****	*****	*****
Mob/ Demob, Per Mile	300	\$3.25	\$975.00
Support Truck, Per Day	2	\$75.00	\$150.00
Per diem, Per Crew Day	2	\$46.00	\$92.00
Lodging, Per Night, Estimated	1	\$250.00	\$250.00
Auger Drilling, Per Ft	92	\$17.50	\$1,610.00
Well Installation, Per Ft	92	\$24.50	\$2,254.00
Flush Mount Vaults with Concrete, Each	4	\$90.00	\$360.00
Standby, Per Hr	0	\$135.00	\$0.00
			*****

ESTIMATED TOTAL: \$5,691.00

### Notes:

- 1) No soils will be containerized.
- 2) Client is responsible to clear location of utilities.
- 3) Client is responsible for disposal of drill cuttings.
- 4) Client will be invoiced only the amounts used.
- 5) We assume that site is accessible by truck mount drill rig.

Proposal By:

Paul Bray

Hansen Env. Drilling  
Glasgow, MT

### COST ESTIMATE

Project:

Eddies Corner - West Lewistown, MT

Client:

RTI - Joe Laudon

Date:

9/4/2013

Parameters:

3 - 25' mon. wells

Quote good for 150 days.

per specs 15' of .010 sc.

CME 55 -

<u>TASK</u>		<u># OF UNITS</u>	<u>TOTAL COST</u>
<b><u>Mobilization/Demobilization</u></b>			
Mobilization/Demobilization (Drilling Rig)	\$ 1,760.00 /lump sum	1	\$ 1,760.00
Hotsy Pres Washer	/day	.	\$ -
<b>Total Mobilization/Demobilization</b>			<b>\$ 1,760.00</b>
<b><u>Per Diem (specify number of individuals )</u></b>			
Per Diem : Motel	\$ 80.00 /person per day	2	\$ 160.00
Per Diem : Food	\$ 23.00 /person per day	4	\$ 92.00
<b>Total Per Diem</b>			<b>\$ 252.00</b>
<b><u>Soil Boring</u></b>			
4" H.S.A. drilling	\$ 30.00 /ft	75	\$ 2,250.00
6" H. S.,A. drilling	/ft	0	\$ -
liners macrocore - 5'	\$ 8.00 /ea	18	\$ 144.00
bent (50#) bag for borings	\$ 11.00 /ea	0	\$ -
<b>Total Soil Boring</b>			<b>\$ 2,394.00</b>
<b><u>Monitoring Well Installation</u></b>			
2' mon wells install. And mat.	\$ 18.00 /ft	75	\$ 1,350.00
abandon 2" mon wells	\$ 275.00 /ea	0	\$ -
8" mon well flush cover install	\$ 200.00 /well	3	\$ 600.00
12" mon well flush cover install	\$ 250.00 /well	0	\$ -
<b>Total Monitoring Well Installation</b>			<b>\$ 1,950.00</b>
<b><u>Standby</u></b>			
Standby	\$ 100.00 /hr	0	\$ -
<b>Total Drilling Standby</b>			<b>\$ -</b>
<b><u>Well Development</u></b>			
Well Development, helping with fuel recovery	\$ 125.00 /well	0	\$ -
<b>Total Well Development</b>		if required	<b>\$ -</b>
<b><u>Concrete drilling</u></b>			
surface concrete drilling	\$ 180.00 /well	0	\$ -
		if required	<b>\$ -</b>
<b><u>TOTAL PROJECT EXPENSES</u></b>			<b>\$ 6,356.00</b>

**Special Conditions/Costs:** client will locate underground utilities and select borehole locations.

**Additional Comments/Costs:** to see our equipment and qualifications see: [hansenenvironmentaldrilling.com](http://hansenenvironmentaldrilling.com)

Thank you for considering Hansen Environmental Drilling Inc.

Signature Steve Hansen



# Engineering

## Memorandum

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**TO:** Joe Rounden  
Resource Technologies Inc  
1050 E Main Street, Suite 4  
Bozeman, MT 59715  
406-585-8005  
rti@montana.net

**FROM:** NCI Engineering Co.

**DATE:** September 26, 2013

**RE:** PowerProbe Fee Proposal: Advancement of 5 Soil Borings to 20' or refusal at Eddie's Corner, MT

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In reply to your request for fee proposal, we propose the following unit rates and estimates for operation of our Power Probe drill rig. We base our estimate on the advancement of five (5) soil borings to 20 ft bgs and/or refusal. Concrete surfacing may require the rental of a concrete saw and utilizing water from the facility, the cost of rental of the equipment and additional operator time would be extra. Surfacing replacement is not included in this price and will be billed at time and material costs. Please advise of appropriate surfacing. Per diem is not included, however if the work extends to two days (dependent on soils encountered) this may be needed and charged at cost plus 10%.

Locates to be called in by others. Disposal of all soil samples will be the responsibility of others. Decontamination of equipment may be completed on-site, either via car wash or hand wash. Our operators do have to be safe and should stay approximately 10' from overhead power. We intend to utilize one PowerProbe operator and one environmental technician.

1)	Drill Rig Mileage/Mobilization: 210 miles @ \$2.56/mi (includes operator time)	\$	537.60
2)	Support Staff Time Travel (\$78.75/hr)	\$	315.00
3)	Probe: LINERS 100'@ \$1.80/VF; Borings @ \$16/VF (Liners are 4' tubes) Includes bentonite backfill	\$	1,815.00
4)	Per Diem estimate (hotel required if 2 days, not anticipated)	\$	---
5)	Decontamination (Staff time 3 hrs @ \$78.75; Wash \$45 est.)	\$	281.25

**Estimated Total Cost**                      **\$ 2,948.85**

If you need any additional materials, equipment or labor at the site, please let us know so we can bring whatever you might need. If there is a change in service required, all additional services will be billed on a time and material basis.

Thanks for contacting us and please let me know if you have any questions or concerns.

Respectfully,

Crystal Morgan, E.I.  
NCI Engineering, Co.

*Sign for Acceptance of the price & approval to begin work:*

\_\_\_\_\_  
Joe Rounden, Resource Technologies Inc

\_\_\_\_\_  
Date



**ARROW CREEK SURVEY CO.**

Lewistown, MT 59457

Geyser, MT 59447

406-538-9223

406-735-4100

Jeremy T. Milburn, PLS

Email: [arrowcreek@3rivers.net](mailto:arrowcreek@3rivers.net)

October 14, 2013

Resources Technologies Inc  
Attn: Joe Laudon  
1050 E. Main Street, Ste 4  
Bozeman, MT 59715

Subject: Eddies Corner Monitor Well Survey – Four Additional Wells

Dear Joe:

Please find the following information per your request for a bid proposal. The extent of this project will be to locate 4 additional monitoring wells. We will supply you with x, y, and z coordinates of each of the wells in a text or ascii format.

The total for the work listed above will be: **\$800.00**

Thank you very much, please call with any questions you may have. I look forward to working with you.

Sincerely,

Jeremy T. Milburn, PLS